State of California
The Resources Agency
Department of Water Resources

NEPA SCOPING DOCUMENT 2
and
AMENDED CEQA NOTICE OF PREPARATION

Oroville Facilities Relicensing
FERC Project No. 2100

FEBRUARY 25, 2003

GRAY DAVIS	**MARY D. NICHOLS**	**THOMAS M. HANNIGAN**
Governor	Secretary for Resources	Director
State of California	The Resources Agency	Department of Water Resources

This page was left intentionally blank

NEPA SCOPING DOCUMENT 2
and
AMENDED CEQA NOTICE OF PREPARATION

Oroville Facilities Relicensing
FERC Project No. 2100

Department of Water Resources
of the
State of California

February 25, 2003

GRAY DAVIS	**MARY D. NICHOLS**	**THOMAS M. HANNIGAN**
Governor	Secretary for Resources	Director
State of California	The Resources Agency	Department of Water Resources

This page was left intentionally blank

TABLE OF CONTENTS

FIGURES

ACRONYMS AND ABBREVIATIONS

af	acre-feet
CEQA	California Environmental Quality Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic feet per second
DFG	California Department of Fish and Game
DWR	California Department of Water Resources
EA	Environmental Assessment
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
FERC	Federal Energy Regulatory Commission
FPA	Federal Power Act
maf	million acre-feet
msl	mean sea level
MW	megawatt
NEPA	National Environmental Policy Act
NOP	Notice of Preparation
OWA	Oroville Wildlife Area
PM&E	Protection, Mitigation, and Enhancement
PDEA	Preliminary Draft Environmental Assessment
SD1	Scoping Document 1
SD2	Scoping Document 2
SWP	State Water Project
SWRCB	State Water Resources Control Board
USACE	U.S. Army Corps of Engineers

1.0 INTRODUCTION

The California Department of Water Resources (DWR) issued Draft Scoping Document 1 and a Notice of Preparation (Draft SD1) in September 2001 for the relicensing of the Oroville Facilities, referred to as Federal Energy Regulatory Commission (FERC) Project 2100. Final SD1 was issued on September 20, 2002. This document, Scoping Document 2 and Amended Notice of Preparation (SD2), reflects the progress made since September 2001 in working collaboratively with the resource agencies, non-governmental organizations, and other interested parties in identifying potential issues, initiating study and evaluation programs, and better defining the expected analytical approaches of the environmental documents being prepared for relicensing-related decision-making.

The purpose of this document is to support the development of either two separate environmental documents or a single joint NEPA/CEQA document. SD2 is an important building block in DWR's development of a Preliminary Draft Environmental Assessment (PDEA), a required component of DWR's Application for License, which is due to the FERC on or before January 30, 2005. The PDEA will be considered by the FERC in their relicensing-related decision-making, in compliance with the National Environmental Policy Act (NEPA). The FERC may choose to adopt the PDEA essentially as submitted or to modify the document as they determine necessary to meet the requirements of NEPA and support their decision-making. DWR's objective is to develop a PDEA that meets the disclosure and analytical requirements of an Environmental Impact Statement (EIS), to assure the PDEA provides as much information as is necessary to support the FERC decision-making. The FERC EIS-preparation guidelines were followed in developing the NEPA Proposed Action and No Action elements of the PDEA described in this document. Comments on these proposed elements, and other components of SD2, will help DWR prepare a PDEA that both complies with NEPA and is adequate in supporting the FERC decision-making.

The second purpose of this document, the Amended Notice of Preparation (NOP), is an important building block in DWR's preparation of an Environmental Impact Report (EIR) for relicensing. The EIR is not required to be included in the FERC Application for License, but may be required under the California Environmental Quality Act (CEQA) to support decision-making by the State Water Resources Control Board (SWRCB) over Section 401 Water Quality Certification and to support decision-making by DWR. CEQA requires DWR to consider the direct and indirect environmental effects in its relicensing-related decision-making, and DWR has tentatively determined that an EIR is necessary. This amended NOP provides information that was not available when the first NOP was circulated in September 2001, including DWR's approaches to several analytical components of the EIR. Notably, the Proposed Project for CEQA is considered DWR's implementation of the terms and conditions of the new FERC license, and/or the terms and conditions contained in a settlement agreement, if different and supplementary. Comments on this approach, and other components of this amended NOP, will help DWR prepare an EIR that complies with CEQA and adequately supports DWR and SWRCB decision-making.

DWR's preference is to prepare a single document that complies with both NEPA and CEQA and to include this draft environmental document in the January 2005 Application for License. This will require the FERC's concurrence with the joint document approach. However,

regardless of whether a single document or two separate documents are prepared, all the requirements of NEPA and CEQA must eventually be satisfied.

The schedule (Figure 1) contemplates completing a draft environmental document (PDEA) that addresses NEPA and CEQA requirements as a part of the Draft Application for License in April 2004. About six-dozen study programs must be concluded during mid-2003 to allow sufficient time to prepare the necessary EIS-level and EIR alternatives evaluations, complete the analyses of potential mitigation and enhancement measures, develop a mitigation-monitoring program, and complete other required analyses and document findings. The current schedules for many of the study programs show deliverable products being completed late in 2003, and in many cases well into 2004. A more complete PDEA document is expected to be included in the Final Application for License in January 2005. Before final agency decisions can be made, the FERC will need to circulate a Draft Environmental Assessment (EA) or EIS and DWR will need to circulate a Draft EIR for agency and public review. These legally required reviews will not take place prior to January 30, 2005, the earliest a Draft EIR could reasonably be circulated, and they could occur as late as 2006, when the FERC Draft EA or EIS would likely be circulated. Both the FERC and DWR will then need to prepare final environmental documents, a Final EA or EIS, and a Final EIR, to support their relicensing decision-making. The FERC is expected to consider issuing a new license in January 2007, when the existing FERC license will expire.

1.1 Public Review of SD2 and Amended CEQA Notice of Preparation

DWR is the Lead Agency in preparing the EIR for the relicensing of the Oroville Facilities and for use by the SWRCB in issuing Section 401 Water Quality Certification. The State Clearinghouse Number for this EIR is: SCH 2001102011. The CEQA Guidelines require the circulation of a NOP to obtain agency comments on the scope and content of the environmental document. Comments relative to the statutory responsibilities of each agency in connection with the proposed project are being solicited through the circulation of this amended NOP. Comments are also invited from Tribes, non-governmental organizations, members of the public, and other interested parties. A project description and brief discussion of potential environmental impacts are provided for your reference and information.

You have until April 28, 2003, to formally respond to this notice. If no response is received, DWR will assume that you and/or your agency have no significant additional input on the scope and content of this environmental impact review. Your comments on the contents of this document will assist DWR in preparing a joint document that contains the information you believe should be considered by the decision-makers, and that complies with the disclosure requirements of both NEPA and CEQA. Comments submitted in response to the original September 2001 NOP do not need to be resubmitted.

Written comments are due by 5:00 pm on April 28, 2003. Please send your comments to Ms. Kim Cotto, either by letter, fax, or e-mail, at the following:

Ms. Kim Cotto
Department of Water Resources
1416 Ninth Street, Room 1115-16
PO Box 942836
Sacramento, CA 94236-0001

Fax: (916) 653-5028
E-Mail: kcotto@water.ca.gov

Please include the name, address, and telephone number of the appropriate contact person in your agency or organization. If you have any questions regarding this NOP, please feel free to contact Ms. Cotto at (916) 653-4658 or send an e-mail to the address above.

1.2 Organization of this Document

SD2 contains information expected to be included in the joint NEPA/CEQA environmental document along with approaches and analytical tools expected to be used in preparing the document. Information in this SD2 is organized as follows:

Section 2.0 includes the Proposed Action to be addressed under NEPA, and the Proposed Project to be addressed under CEQA. These are the actions or activities to be approved by FERC and SWRCB, and implemented by DWR that could have direct or indirect effects on the environment. These are important components to the NEPA/CEQA document because the analyses will focus on identifying and addressing the significant effects of these specific actions or activities.

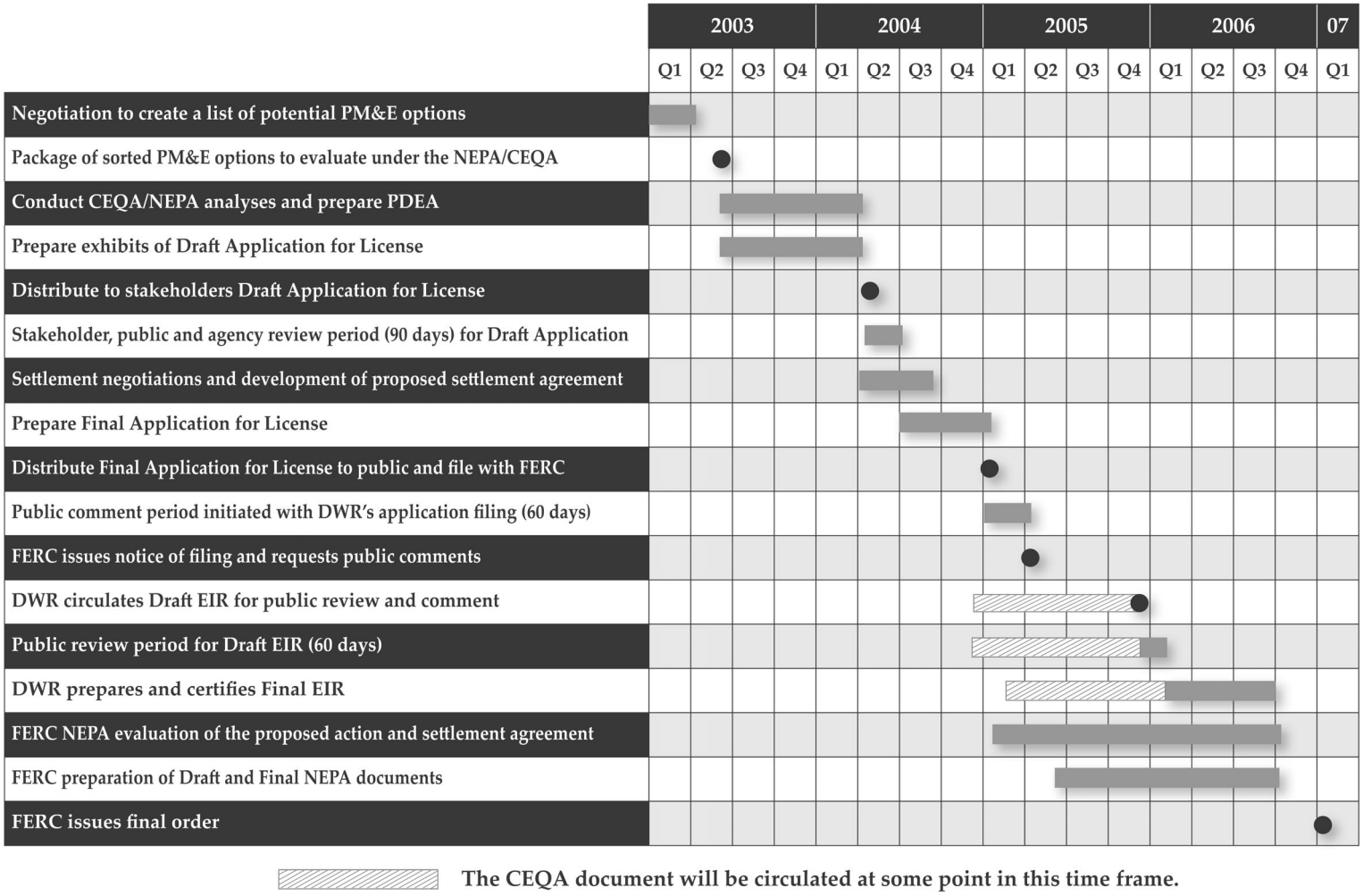
Section 3.0 describes the Oroville Facilities and their operational constraints. A key component of the Proposed Action and Proposed Project will be continuing to operate and maintain these facilities during the term of a new FERC license consistent with a number of on-going obligations and regulatory requirements.

Section 4.0 includes the Statement of Purpose and Need, required by NEPA, and the Project Objectives, required by CEQA. This section describes the power supply, water supply, flood management, recreation, and environmental purposes of the project. These will be important in the alternatives analysis developed for the joint NEPA/CEQA environmental document, because alternatives must meet most or all of the identified purposes and objectives to be considered reasonable.

Section 5.0 describes the alternatives that will be evaluated in detail, along with several alternatives that will be considered within the NEPA/CEQA document, but not evaluated in detail. The alternatives analysis is expected to be an important component of the NEPA/CEQA document.

Section 6.0 provides a description of the proposed analysis for cumulative impacts and cumulative effects.

Figure 1
OROVILLE FACILITIES RELICENSING
Tentative Environmental Review Process Schedule



2.0 PROPOSED ACTION AND PROPOSED PROJECT

The FERC, DWR, and SWRCB decision-makers will use the NEPA/CEQA document to assure their understanding of the direct and indirect environmental effects that will result if they approve the Proposed Action (NEPA) and Proposed Project (CEQA). Clear statements of physical activities being considered for approval are important to the decision-making process. This is necessary to assure an understanding of specific effects on the environment, and to assure the decision-makers have appropriately exercised their discretionary responsibilities.

2.1 Proposed Action

The NEPA Proposed Action to be addressed in the PDEA is continuing to operate and maintain the Oroville Facilities for electric power generation and implementing the terms and conditions contained in a new FERC license and the settlement agreement. This Proposed Action is consistent with the FERC guidance in the preparation of EISs for hydropower relicensing.

The FERC, as NEPA Lead Agency, will use the PDEA to develop a Draft and Final EA or EIS to support their decision-making under the Federal Power Act (FPA) in issuing DWR a new license to continue operating and maintaining the Oroville Facilities for power generation.

2.2 Proposed Project

The CEQA Proposed Project to be addressed in the EIR is the implementation of the new terms and conditions contained in the new FERC license and the settlement agreement. DWR will use the PDEA to prepare a Draft and Final EIR to assure compliance with CEQA in implementing new relicensing-related protection, mitigation, and enhancement measures (PM&Es) that could have direct or indirect effects on the environment. The SWRCB will use the Final EIR in its decision-making in connection with Section 401 Water Quality Certification.

This page was left intentionally blank

3.0 PROJECT FACILITIES AND OPERATIONAL CONSTRAINTS

The Oroville Facilities are located on the Feather River in the foothills of the Sierra Nevada in Butte County, California. They are located near the City of Oroville approximately 70 miles north of Sacramento. The following sections provide an overview of the project facilities and general operational constraints.

3.1 Overview of the Oroville Facilities

The Oroville Facilities were developed as part of the State Water Project (SWP), a water storage and delivery system of reservoirs, aqueducts, power plants, and pumping plants. The main purpose of the SWP is to store and distribute water to supplement the needs of urban and agricultural water users in northern California, the San Francisco Bay area, the San Joaquin Valley, and southern California. The Oroville Facilities are also operated for flood management, power generation, to improve water quality in the Delta, provide recreation, and enhance fish and wildlife.

FERC Project No. 2100 encompasses 41,100 acres and includes Oroville Dam and Reservoir, three power plants (Hyatt Pumping-Generating Plant, Thermalito Diversion Dam Power Plant, and Thermalito Pumping-Generating Plant), Thermalito Diversion Dam, the Feather River Fish Hatchery and Fish Barrier Dam, Thermalito Power Canal, Oroville Wildlife Area (OWA), Thermalito Forebay and Forebay Dam, Thermalito Afterbay and Afterbay Dam, and transmission lines, as well as a number of recreational facilities. An overview of these facilities is provided on Figure 2. The Oroville Dam, along with two small saddle dams, impounds Lake Oroville, a 3.5-million-acre-feet (maf) capacity storage reservoir with a surface area of 15,810 acres at its normal maximum operating level.

The hydroelectric facilities have a combined licensed generating capacity of approximately 762 megawatts (MW). The Hyatt Pumping-Generating Plant is the largest of the three power plants with a capacity of 645 MW. Water from the six-unit underground power plant (three conventional generating and three pumping-generating units) is discharged through two tunnels into the Feather River just downstream of Oroville Dam. The plant has a generating and pumping flow capacity of 16,950 cfs and 5,610 cfs, respectively. Other generation facilities include the 3-MW Thermalito Diversion Dam Power Plant and the 114-MW Thermalito Pumping-Generating Plant.

Thermalito Diversion Dam, four miles downstream of the Oroville Dam creates a tail water pool for the Hyatt Pumping-Generating Plant and is used to divert water to the Thermalito Power Canal. The Thermalito Diversion Dam Power Plant is a 3-MW power plant located on the left abutment of the Diversion Dam. The power plant releases a maximum of 615 cubic feet per second (cfs) of water into the river.

The Power Canal is a 10,000-foot-long channel designed to convey generating flows of 16,900 cfs to the Thermalito Forebay and pump-back flows to the Hyatt Pumping-Generating Plant. The Thermalito Forebay is an off-stream regulating reservoir for the 114-MW Thermalito Pumping-Generating Plant. The Thermalito Pumping-Generating Plant is designed to operate

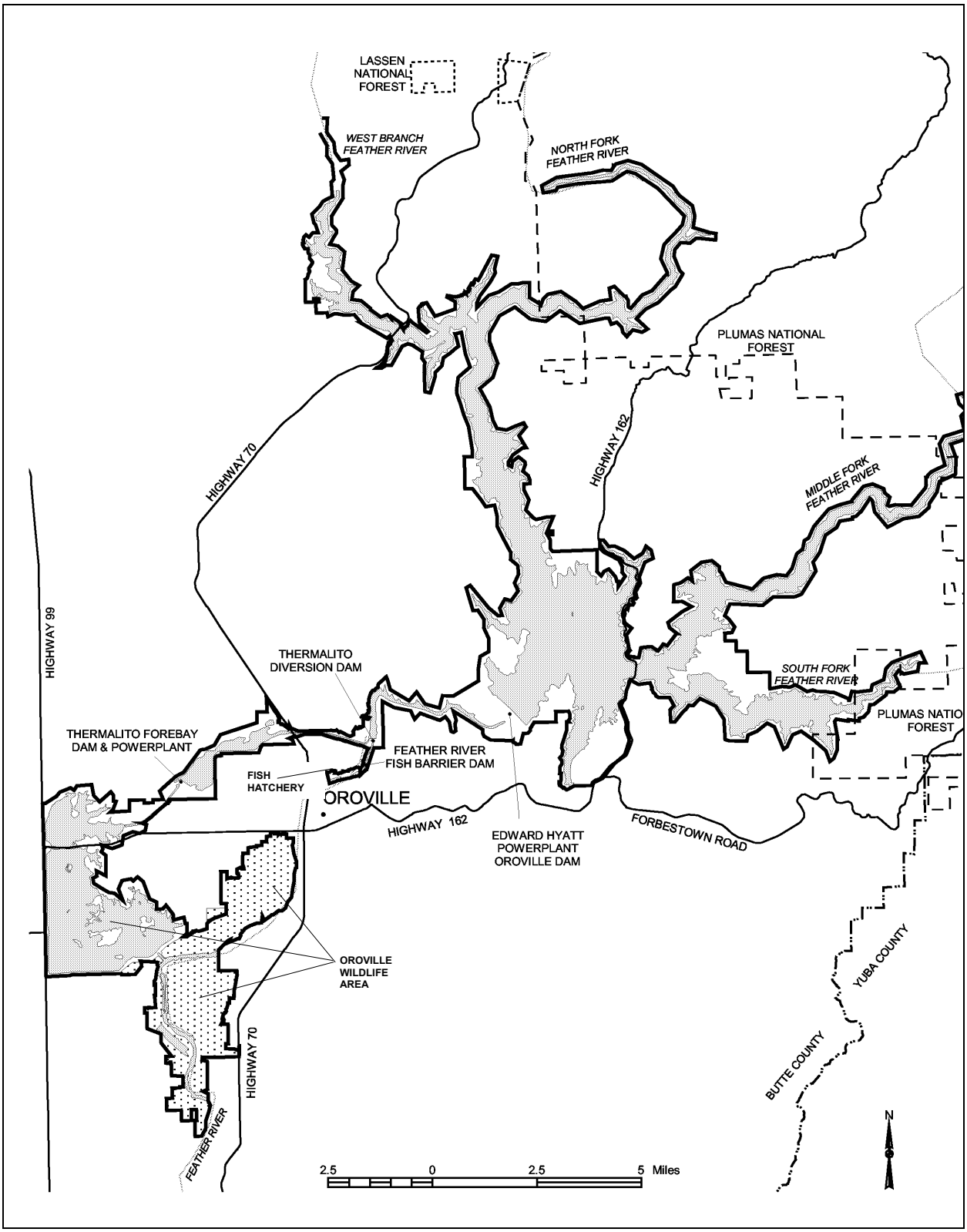


Figure 2. Oroville Facilities FERC Project Boundary

in tandem with the Hyatt Pumping-Generating Plant and has generating and pump-back flow capacities of 17,400 cfs and 9,120 cfs, respectively. When in generating mode, the Thermalito Pumping-Generating Plant discharges into the Thermalito Afterbay, which is contained by a 42,000-foot-long earth-fill dam. The Afterbay is used to release water into the Feather River downstream of the Oroville Facilities, helps regulate the power system, provides storage for pump-back operations, and provides recreational opportunities. Several local irrigation districts receive water from the Afterbay.

The Feather River Fish Barrier Dam is downstream of the Thermalito Diversion Dam and immediately upstream of the Feather River Fish Hatchery. The flow over the dam maintains fish habitat in the low-flow channel of the Feather River between the dam and the Afterbay outlet, and provides attraction flow for the hatchery. The hatchery was intended to compensate for spawning grounds lost to returning salmon and steelhead trout from the construction of Oroville Dam. The hatchery can accommodate an average of 8,000 adult fish annually.

The Oroville Facilities support a wide variety of recreational opportunities. They include: boating (several types), fishing (several types), fully developed and primitive camping (including boat-in and floating sites), picnicking, swimming, horseback riding, hiking, off-road bicycle riding, wildlife watching, hunting, and visitor information sites with cultural and informational displays about the developed facilities and the natural environment. There are major recreation facilities at Loafer Creek, Bidwell Canyon, the Spillway, North and South Thermalito Forebay, and Lime Saddle. Lake Oroville has two full-service marinas, five car-top boat launch ramps, ten floating campsites, and seven dispersed floating toilets. There are also recreation facilities at the Visitor Center and the OWA.

The OWA comprises approximately 11,000-acres west of Oroville that is managed for wildlife habitat and recreational activities. It includes the Thermalito Afterbay and surrounding lands (approximately 6,000 acres) along with 5,000 acres adjoining the Feather River. The 5,000 acre area straddles 12 miles of the Feather River, which includes willow and cottonwood lined ponds, islands, and channels. Recreation areas include dispersed recreation (hunting, fishing, and bird watching), plus recreation at developed sites, including Monument Hill day use area, model airplane grounds, three boat launches on the Afterbay and two on the river, and two primitive camping areas. California Department of Fish and Game's (DFG) habitat enhancement program includes a wood duck nest-box program and dry land farming for nesting cover and improved wildlife forage. Limited gravel extraction also occurs in a number of locations.

3.2 General Project Operational Constraints

Operation of the Oroville Facilities varies seasonally, weekly and hourly, depending on hydrology and the objectives DWR is trying to meet. Typically, releases to the Feather River are managed to conserve water while meeting a variety of water delivery requirements, including flow, temperature, fisheries, recreation, diversion and water quality. Lake Oroville stores winter and spring runoff for release to the Feather River as necessary for project purposes. Meeting the water supply objectives of the SWP has always been the primary consideration for determining Oroville Facilities operation (within the regulatory constraints specified for flood control, in-stream fisheries, and downstream uses). Power production is scheduled within the boundaries

specified by the water operations criteria noted above. Annual operations planning is conducted for multi-year carry over. The current methodology is to retain half of the Lake Oroville storage above a specific level for subsequent years. Currently, that level has been established at 1,000,000 acre-feet (af); however, this does not limit draw down of the reservoir below that level. If hydrology is drier than expected or requirements greater than expected, additional water would be released from Lake Oroville. The operations plan is updated regularly to reflect changes in hydrology and downstream operations. Typically, Lake Oroville is filled to its maximum annual level of up to 900 feet above mean sea level (msl) in June and then can be lowered as necessary to meet downstream requirements, to its minimum level in December or January. During drier years, the lake may be drawn down more and may not fill to the desired levels the following spring. Project operations are directly constrained by downstream operational constraints and flood management criteria as described below.

3.2.1 Downstream Operation

An August 1983 agreement between DWR and DFG entitled, "Agreement Concerning the Operation of the Oroville Division of the State Water Project for Management of Fish & Wildlife," sets criteria and objectives for flow and temperatures in the low flow channel and the reach of the Feather River between Thermalito Afterbay and Verona. This agreement: (1) establishes minimum flows between Thermalito Afterbay Outlet and Verona which vary by water year type; (2) requires flow changes under 2,500 cfs to be reduced by no more than 200 cfs during any 24-hour period, except for flood management, failures, etc.; (3) requires flow stability during the peak of the fall-run Chinook spawning season; and (4) sets an objective of suitable temperature conditions during the fall months for salmon and during the later spring/summer for shad and striped bass.

Instream Flow Requirements

The Oroville Facilities are operated to meet minimum flows in the Lower Feather River as established by the 1983 agreement (see above). The agreement specifies that Oroville Facilities release a minimum of 600 cfs into the Feather River from the Thermalito Diversion Dam for fisheries purposes. This is the total volume of flows from the diversion dam outlet, diversion dam power plant, and the Feather River Fish Hatchery pipeline.

Generally, the instream flow requirements below Thermalito Afterbay are 1,700 cfs from October through March, and 1,000 cfs from April through September. However, if runoff for the previous April through July period is less than 1,942,000 af (i.e., the 1911-1960 mean unimpaired runoff near Oroville), the minimum flow can be reduced to 1,200 cfs from October to February, and 1,000 cfs for March. A maximum flow of 2,500 cfs is maintained from October 15 through November 30 to prevent spawning in overbank areas that might become de-watered.

Temperature Requirements

The Diversion Pool provides the water supply for the Feather River Fish Hatchery. The hatchery objectives are 52°F for September, 51°F for October and November, 55°F for December through March, 51°F for April through May 15, 55°F for last half of May, 56°F for June 1-15, 60°F for

June 16 through August 15, and 58°F for August 16-31. A temperature range of plus or minus 4°F is allowed for objectives, April through November.

There are several temperature objectives for the Feather River downstream of the Afterbay Outlet. During the fall months, after September 15, the temperatures must be suitable for fall-run Chinook. From May through August, they must be suitable for shad, striped bass, and other warmwater fish.

The National Marine Fisheries Service has also established an explicit criterion for steelhead trout and spring-run Chinook salmon. Memorialized in a biological opinion on the effects of the Central Valley Project and SWP on Central Valley spring-run Chinook and steelhead as a reasonable and prudent measure; DWR is required to control water temperature at Feather River mile 61.6 (Robinson's Riffle in the low-flow channel) from June 1 through September 30. This measure requires water temperatures less than or equal to 65°F on a daily average. The requirement is not intended to preclude pump-back operations at the Oroville Facilities needed to assist the State of California with supplying energy during periods when the California ISO anticipates a Stage 2 or higher alert.

The hatchery and river water temperature objectives sometimes conflict with temperatures desired by agricultural diverters. Under existing agreements, DWR provides water for the Feather River Service Area (FRSA) contractors. The contractors claim a need for warmer water during spring and summer for rice germination and growth (i.e., 65°F from approximately April through mid May, and 59°F during the remainder of the growing season). There is no obligation for DWR to meet the rice water temperature goals. However, to the extent practical, DWR does use its operational flexibility to accommodate the FRSA contractor's temperature goals.

Water Diversions

Monthly irrigation diversions of up to 190,000 (July 2002) af are made from the Thermalito Complex during the May through August irrigation season. Total annual entitlement of the Butte and Sutter County agricultural users is approximately 1 maf. After meeting these local demands, flows into the lower Feather River continue into the Sacramento River and into the Sacramento-San Joaquin Delta. In the northwestern portion of the Delta, water is pumped into the North Bay Aqueduct. In the south Delta, water is diverted into Clifton Court Forebay where the water is stored until it is pumped into the California Aqueduct.

Water Quality

Flows through the Delta are maintained to meet Bay-Delta water quality standards arising from DWR's water rights permits. These standards are designed to meet several water quality objectives such as salinity, Delta outflow, river flows, and export limits. The purpose of these objectives is to attain the highest water quality, which is reasonable, considering all demands being made on the Bay-Delta waters. In particular, they protect a wide range of fish and wildlife including Chinook salmon, Delta smelt, striped bass, and the habitat of estuarine-dependent species.

3.2.2 Flood Management

The Oroville Facilities are an integral component of the flood management system for the Sacramento Valley. During the wintertime, the Oroville Facilities are operated under flood control requirements specified by the U.S. Army Corps of Engineers (USACE). Under these requirements, Lake Oroville is operated to maintain up to 750,000 af of storage space to allow for the capture of significant inflows. Flood control releases are based on the release schedule in the flood control diagram or the emergency spillway release diagram prepared by the USACE, whichever requires the greater release. Decisions regarding such releases are made in consultation with the USACE.

The flood control requirements are designed for multiple use of reservoir space. During times when flood management space is not required to accomplish flood management objectives, the reservoir space can be used for storing water. From October through March, the maximum allowable storage limit (point at which specific flood release would have to be made) varies from about 2.8 to 3.2 maf to ensure adequate space in Lake Oroville to handle flood flows. The actual encroachment demarcation is based on a wetness index, computed from accumulated basin precipitation. This allows higher levels in the reservoir when the prevailing hydrology is dry while maintaining adequate flood protection. When the wetness index is high in the basin (i.e., wetness in the watershed above Lake Oroville), the flood management space required is at its greatest amount to provide the necessary flood protection. From April through June, the maximum allowable storage limit is increased as the flooding potential decreases, which allows capture of the higher spring flows for use later in the year. During September, the maximum allowable storage decreases again to prepare for the next flood season. During flood events, actual storage may encroach into the flood reservation zone to prevent or minimize downstream flooding along the Feather River.

4.0 STATEMENT OF PURPOSE AND NEED/PROJECT OBJECTIVES

The underlying purpose/objective of the Proposed Action/Project is to obtain electric power generation-related benefits from the continued operation and maintenance of the Oroville Facilities. The electricity is needed by the State of California, which has experienced power supply shortages in recent years. Electricity demand is expected to continue to grow in California. The continued operation of the Oroville Facilities for electric power generation alleviates the need for new sources of 762 MW of electric power. In addition, the continued operation and maintenance of the Oroville Facilities for power generation must be consistent with the several other purposes of the Facilities. These include water supply, the primary purpose of the Facilities, along with flood management, recreation, and environmental purposes, as outlined in Section 3.0 and the following.

4.1 Electric Power Purposes

The Oroville Facilities generate hydroelectric power and provide other important ancillary electrical system benefits, including spinning reserve, peaking capacity, voltage regulation and grid stability. About 40 percent of the power is provided to Southern California Edison Company under an exchange agreement. While the power generated from the facility is used to help offset SWP power costs, almost all of the power is delivered to the state power grid, satisfying about 2% of the statewide peak-load demands. With the exception of pump-back generation operations and daily peaking of power generation, production of power is governed by releases for flood management, environmental, water quality and water supply operations as discussed in Section 3.

4.2 Water Supply Purposes

The Oroville Facilities are an extremely important part of the SWP, a major California-wide water storage and delivery system consisting of several reservoirs, aqueducts, power plants and pumping plants. The main purpose of the SWP is to conserve and distribute water to serve the needs of urban and agricultural users in northern California, the San Francisco Bay area, the San Joaquin Valley, and southern California. The Oroville Facilities are operated in close coordination with the major SWP pumping facilities within the Sacramento/San Joaquin Delta, consistent with landmark multi-agency Delta environmental protection agreements, and in Delta environmental management needs. The SWP is also operated in close coordination with the federal Central Valley Project (CVP), which also has storage facilities in Northern California and major pumping facilities in the Delta. The Oroville Facilities and the remainder of the SWP are vital to maintaining California's economy.

The Oroville Facilities fulfill the following water supply purposes that are based on contractual and regulatory obligations:

- Irrigation water supply for historic Feather River water rights holders in Butte and Sutter counties.
- In-stream flows for Chinook salmon, steelhead and other aquatic species.

- Salinity control in the Delta and Suisun Marsh, pursuant to the State Water Resources Control Board's 1995 Bay-Delta Water Quality Control Plan.
- SWP contractor diversions upstream of the Delta.
- Delta exports for SWP contractors.
- Capacity for water transfers, including CALFED Environmental Water Account.

4.3 Flood Management Purposes

Flood management was a major objective in the original construction of the Oroville Facilities, and the reservoir continues to be an important source of downstream flood protection for agricultural properties and rural and urban communities located along the Feather and Sacramento Rivers, including the Sacramento Metropolitan Area. The federal government, through the USACE, provided capital funding for the flood management storage component of the Oroville Facilities and has ongoing jurisdiction over flood management operations. Flood management remains a key purpose of the Oroville Facilities.

4.4 Recreation and Environmental Enhancement Purposes

The Oroville Facilities are also operated and maintained to meet important recreational and fish and wildlife protection purposes. These include the operation and maintenance of the recreation facilities that are a part of the FERC license, support for the fish hatchery, operation of the OWA, and the release of flows into the Feather River that help support fish and aquatic habitat.

5.0 ALTERNATIVES

Both NEPA and CEQA require an evaluation of a range of reasonable alternatives to the Proposed Action and Proposed Project. In this instance, the range of reasonable alternatives is relatively narrow since many potential alternatives will not meet the primary objectives of the Proposed Project/Action, including operations and maintenance of facilities for power and water supply. Therefore, DWR proposes to evaluate three primary alternatives in detail in the PDEA, including the No Action (NEPA) and No Project (CEQA), described below.

5.1 Settlement/Comprehensive Resource Alternative

The Settlement/Comprehensive Resource Alternative will be the NEPA Proposed Action and CEQA Proposed Project. It will include the continued operation and maintenance of the Oroville Facilities for power generation along with implementation of the terms and conditions of the new FERC license and the settlement agreement. This alternative will include mitigation measures to reduce or alleviate on-going significant environmental impacts, along with enhancement measures that meet resource goals and objectives identified and agreed upon through the collaborative settlement process.

5.2 Mitigation Alternative/Non-Settlement Alternative

This alternative will include the continued operation and maintenance of the Oroville Facilities for power generation, along with terms and conditions proposed by DWR to mitigate significant environmental impacts and to enhance recreation and environmental values to a level considered appropriate by the DWR. This alternative assumes settlement is not reached with the relicensing participants. It would be based primarily upon meeting the legal requirements of reducing significant impacts to less-than-significant levels. The PM&Es proposed within this alternative are expected to include existing license terms and conditions, either revised or as they exist at present, along with enhancement measures that may be different from those that might be included as a part of a comprehensive settlement agreement.

5.3 No Action/No Project Alternative

Under the No Action and No Project Alternative, the Oroville Facilities would continue to operate under the terms and conditions of the existing license, and no new PM&Es would be implemented other than those arising from existing legal obligations. Existing recreation and environmental protection-related measures would continue to be implemented under the No Action/No Project Alternative as described below.

5.3.1 Recreation Measures

The existing license provides for a variety of recreational facilities that support boating, hiking, camping, horseback riding, fishing, hunting, picnicking, shooting, swimming, and nature viewing. In addition to routine maintenance and operation of these facilities, DWR monitors recreation use levels to help assess the need for additional facilities. Under the current license, DWR has implemented recreational safety enhancements, including the installation of guardrails

or safety railings along the boat launching structure on the eastern shore of the Afterbay. The licensee was also ordered to install temporary signs to warn boaters of fluctuating water levels and submerged hazards at all access points along the Afterbay reservoir. The following is a list of recreational facilities that are maintained and operated under the current license:

- North Thermalito Forebay Recreation Area
- South Thermalito Forebay Recreational Area
- Thermalito Afterbay Launch Ramps: Monument Hill, Wilbur Road, Larkin Road
- Monument Hill Day Use Area
- OWA primitive camping and access
- Lime Saddle Campground and Day Use Area
- Craig Area Boat-In Campsites
- Goat Ranch Area Boat-In Campsites
- Bloomer Area Boat-In Campsites
- Foreman Creek Area Boat-In Campsites
- Loafer Creek Campground and Day Use Area
- Bidwell Canyon Campground and Day Use Area
- Car-top Boat Ramps: Dark Canyon, Nelson Bar, Vinton Gulch, Stringtown, and Foreman Creek
- Spillway Recreational Area at Oroville Dam
- Enterprise Ramp and Day Use Area
- Diversion Pool Day Use Area
- Lake Oroville Visitor Center
- Lake Oroville Floating Campsites and Restrooms
- Marinas at Lime Saddle and Bidwell Canyon
- Equestrian, Bicycle, and Hiking Trails

5.3.2 Oroville Wildlife Area

The OWA includes the Thermalito Afterbay and lands surrounding the Afterbay and extends along the Feather River almost 12 miles downstream from the Highway 162 Bridge. The OWA provides for wildlife habitat and recreational activities, including hunting, fishing, nature viewing, camping, biking, horseback riding, picnicking, and boating. Portions of the OWA are managed to provide nesting and foraging cover for resident and migratory waterfowl.

5.3.3 Feather River Fish Hatchery

The hatchery is located on the north bank of the Feather River, approximately 4.5 miles downstream from the main dam. The hatchery facilities continue to mitigate for the loss of spawning habitat that resulted from construction of the Oroville Dam by providing salmon and steelhead for release and support the Oroville Reservoir stocking program. The hatchery

facilities are open to the public and receive a high level of visitation throughout the spawning season.

5.3.4 Fisheries Enhancements

Measures pertaining to fisheries primarily address concerns regarding the fish habitat improvement, minimum flows and facility operations that conserve and develop fish resources. Measures pertaining to DWR's Fish Habitat Improvement Plan require planting of trees and vegetation to improve the fish habitat. Other measures address discharge of harmful substances and maintenance of minimum flows. A 1984 FERC order states that upon completion of construction of the Thermalito Diversion Dam Power Plant, the licensee shall operate the Oroville Facilities in such a manner so as to maintain a minimum flow of 600 cfs within the Feather River downstream from the Thermalito Diversion Dam. Downstream from the Thermalito Afterbay Outlet, the license requires a minimum release of 1,000 cfs from April through September; and 1,700 cfs from October through March when the April to July unimpaired runoff in the Feather River is greater than 55 percent of normal. When the April to July unimpaired runoff is less than 55 percent of normal, the license requires minimum flows of 1,000 cfs from March to September; and 1,200 cfs from October to February. Flows for fisheries protection are also managed to meet criteria set forth by the California Department of Fish and Game and the U.S. Fish and Wildlife Service in opinions issued under the State and federal Endangered Species Acts.

5.3.5 Fire Protection and Fuels Management

The license also requires DWR to take reasonable precautions to prevent or suppress fires on lands occupied under the license. In addition, the licensee is responsible for clearing portions of transmission line rights-of-way across lands of the United States as a precautionary measure against fire. The license further required that the licensee provide for such additional equipment and facilities as may be determined by the Regional Forester to be necessary for the prevention and suppression of fires near the Oroville Reservoir upon national forest lands or within the Forest Service Protection Zone. This last requirement included a provision that the total cost to the licensee shall not exceed $300,000 based on the December 1954 Engineering News Record Construction Cost Index.

5.4 Alternatives Described and Eliminated From Further Consideration

The NEPA/CEQA document will describe a range of alternatives to the Proposed Action and Proposed Project, and will explain why some of the alternatives were considered, but not evaluated in detail. The following identifies several alternatives raised by DWR, it's consulting team, or the relicensing participants that are not proposed for detailed evaluation within the NEPA/CEQA document. In one form or another, these alternatives involve either transferring the operation and maintenance of the Oroville Facilities to another governmental entity or discontinuing power generation. Neither of these potential scenarios is considered reasonable or even remotely likely. Briefly discussed below are: 1) nonpower license; 2) decommissioning; 3) Oroville Dam removal and decommissioning; and 4) federal takeover.

5.4.1 Nonpower License

The alternative of FERC issuing a nonpower license is not proposed for detailed evaluation in the NEPA/CEQA document, for a number of reasons. A nonpower license is a temporary license that the Commission would terminate whenever it determines that another governmental agency will assume regulatory authority and supervision over the lands and facilities covered by the nonpower license. The Commission, under the authority of the FPA, allows licensees to apply for nonpower licenses, which would permit the licensees to cease operation of their power generation facilities. As part of these actions, the Commission's regulations require that an EA or EIS be prepared in accordance with the National Environmental Policy Act of 1969, as amended (42 U.S.C. Section 4321 et seq.) (NEPA), CEQ guidelines, 40 CFR Part 1500, and other applicable laws.

Furthermore, the applicant must provide information required under 18 CFR 16.11 including but not limited to: (1) a proposal that shows the manner in which the applicant plans to remove or otherwise dispose of the project's power facilities, (2) any proposal to repair or rehabilitate any nonpower facilities, and (3) a statement of the costs associated with removing the project's power facilities and with any necessary restoration and rehabilitation work.

The nonpower license would continue to cover and address all of the Oroville Facilities which include the Oroville Dam and Reservoir, the Hyatt Plant, Thermalito Pumping-Generating Power Plant, Thermalito Diversion Dam Power Plant, Thermalito Forebay and Afterbay, and associated recreational and fish and wildlife preservation and enhancement facilities. DWR could be required to maintain the recreational facilities, fish hatchery, and the OWA.

Under a nonpower license, the three Oroville power plants (Hyatt, Thermalito Diversion Dam and Thermalito Pumping-Generating Plants) would remain in place but be made temporarily inoperable. The dams and the powerhouse intakes would remain operable. The facilities could no longer be used to generate power, but they would retain their role in flood management, recreation, environmental purposes (fisheries and wildlife habitat enhancement) and water delivery (irrigation, salinity control, delta conditions, etc.).

A termination of facility operations, temporary or otherwise, would have significant impact on power supply for the State's power grid by eliminating 762 MW or roughly 2% of the State's peak supply. Additionally, ancillary system benefits, including spinning reserve, peaking capacity, voltage regulation and grid stability would be lost and cost for developing replacement power would be considerable.

At this point, no agency has suggested a willingness or ability to assume regulatory authority and supervision over the lands and facilities covered by the nonpower license. No party has sought a nonpower license and we have no basis for concluding that the Oroville Facilities should no longer be used to produce power. Additionally, a nonpower license would not support the primary purpose and needs of the Oroville Facilities that relate to electric power. Given this, and the other factors outlined above, a nonpower license for the Oroville Facilities will not be considered further.

5.4.2 Decommissioning

The regulations pertaining to nonpower licenses under FERC, FPA, NEPA and CFR as outlined above would also apply to decommissioning without dam removal. Under decommissioning without dam removal, the three Oroville power plants would be removed, the equipment salvaged or disposed of, and the powerhouse sites graded and restored. The dams and powerhouse intakes would remain operable. Similar to the arrangement under the nonpower alternative, the facilities could no longer be used to generate power, but they would retain their role in water supply, flood management, recreation, and environmental purposes. This alternative differs from the nonpower alternative described above in that the generation plants would be removed and become permanently inoperable.

Under 18 CFR 6.2, the licensee may surrender its license if it has satisfied all conditions imposed by the Commission to protect the public interest, including those related to disposition of constructed facilities. The licensee is also required to: (1) file a schedule for the submittal of a surrender of license, (2) file a surrender application according to the approved schedule, and (3) provide for disposition of all project facilities. Where project facilities have been constructed on federal lands, the licensee must restore the project lands to a satisfactory condition and continue paying annual charges until the effective date of the order accepting surrender. Once decommissioning has been completed, and the area restored to a satisfactory condition, the Commission would no longer be involved with the Oroville Facilities.

The purpose of this action would be to decommission while maintaining the impoundment and the critical non-power related roles performed by the Oroville Facilities. If the dams are not removed, they would have to be maintained to prevent dam failures and the attendant threat to public safety. Additionally, the dams would need to be maintained to allow the Oroville Facilities to continue their role in flood management, recreation, environmental purposes and water delivery.

Decommissioning would have a significant permanent impact on power supply the State's power grid (see Section 5.4.1 above). Additionally, decommissioning would not support the primary purpose and needs of the Oroville Facilities that relate to electric power. Given this, and the fact that the DWR has not indicated any willingness to maintain the dams as non-power producing dams, decommissioning of the Oroville Facilities has been eliminated from further consideration.

5.4.3 Oroville Dam Removal and Decommissioning

Under dam removal and decommissioning, the Oroville Dam would be removed and the Hyatt Power Plant would be decommissioned. The Diversion Dam Power Plant and Thermalito Pumping-Generating Plant would remain in place for generation with unregulated flows from the Feather River. In that the Oroville Reservoir would no longer exist to provide adequate water storage and release, the remaining generating plants would operate similar to run-of-river plants, losing much of their capability to provide reliable energy and ancillary services such as spinning reserve, peaking capacity and grid stability. The Thermalito Diversion Dam would remain in place, continuing to divert water to the Thermalito Forebay and Afterbay, allowing these facilities to continue their role in recreation, environmental purposes and water delivery for local

irrigation. These roles would also continue for the Fish Barrier Dam and the Thermalito Afterbay Dam that would remain in place.

The primary purpose of this action would be to restore much of the Lake Oroville area to its original natural habitat. This alternative, however, would have significant negative impacts. While, the facilities could still play vital roles in recreation, environmental purposes and water supply, these functions would be significantly diminished with the removal of the Oroville Dam and its capability to store and release 3.5 maf of storage capacity currently available at Lake Oroville. Few, if any, water supply benefits would remain and flood protection would virtually disappear. As roughly 85% of the power generation would be decommissioned and pumped-storage peaking operations eliminated, this action would have a significant permanent impact on power supply for the State's power grid. Dam removal activities would result in short-term increases in downstream turbidity and sedimentation and in temporary increases in noise, dust, exhaust emissions, and traffic in the vicinity of the Oroville Facilities. There could be significant impacts to the recreation and property values around Lake Oroville. A lower lake level would be established, potentially destroying existing shoreline wetlands and other habitat. A lower lake level would expose currently inundated archaeological sites to damage from vandalism and illicit collecting. Restoration activities such as revegetation and slope stabilization would be required to restore the land previously inundated by approximately 16,000 surface acres of water, comprising Lake Oroville. DWR would also need to decommission the water-related recreation facilities at Lake Oroville, which include boat launches, and floating and boat-in camps. Reduced recreational use of these facilities would lead to reduced economic benefits from recreational activities and project spending. Recreation facilities (campgrounds, picnic areas, boat launches, beaches, etc.) would no longer be maintained at Loafer Creek, Bidwell Canyon, the Spillway, and Lime Saddle; however the Lake Oroville Visitor Center, OWA, Thermalito Afterbay, and Thermalito Forebay would remain.

Removal of the dam would increase riverine habitat for several dozen miles, benefiting fish, wildlife, and riparian habitats. Recreational opportunities associated with riverine conditions (rafting, kayaking, and fishing) could increase, with related economic benefits to local communities. Fish passage would not be improved as the fish barrier dam and Thermalito Diversion Dam would remain in place. The fish hatchery would likely continue operations to mitigate for fisheries impacts. Adverse visual effects of a temporary nature during removal activities would give way over the long term to visual benefits from removal of project structures.

The cost to remove the dam and power plant would be significant. Additionally, this alternative would not support the primary purpose and needs of the Oroville Facilities that relate to electric power, water supply, flood management, recreation and environmental purposes. Removal of all dams associated with the Oroville Facilities would not meet the project purpose and needs, and generate similar impacts as described for removal of the main dam. Given these considerations, decommissioning facilities and removal of the dams included in the Oroville Facilities will not be further evaluated.

5.4.4 Federal Takeover

A federal department or agency may file a recommendation that the United States exercise its right to take over a hydroelectric power project with a license that is subject to Sections 14 and 15 of the FPA. The recommendation must be filed no earlier than five years before the license expires and no later than the end of the comment period specified by the Federal Energy Regulatory Commission (Commission). Federal takeover and operation of the Oroville Facilities would require congressional approval as provided under Section 14 of the FPA. Furthermore, should a takeover occur, DWR must follow procedures relating to takeover and relicensing as outlined in 18 CFR, Part 16.

While these facts alone would not preclude further consideration of this alternative, there is currently no evidence showing that a federal takeover should be recommended to Congress. No party has suggested that federal takeover would be appropriate and no federal agency has expressed interest in operating the Oroville Facilities. Therefore, federal takeover of the Oroville Facilities will not be considered further.

This page was left intentionally blank

6.0 CUMULATIVE IMPACTS/CUMULATIVE EFFECTS PROPOSED ANALYSIS

An analysis of cumulative impacts/cumulative effects must be presented as part of the environmental document. The FERC NEPA Guidelines, ESA, CEQA Guidelines, and CEQ NEPA Regulations provide guidance for evaluation of cumulative impacts. The CEQA Guidelines provide a definition of cumulative impacts so that a common understanding of the term is utilized. For NEPA, the CEQ published a generalized document that provides guidance for considering cumulative effects on the environment. Environmental effects may result not only from the direct effects of an individual project, but also from the cumulative effects of individually minor projects over time. Cumulative impacts from two or more projects can be defined as the change in the environment that results from the incremental impact of the proposed project when added to other closely related past, present, and reasonably foreseeable future projects. Both the CEQA Guidelines and NEPA Regulations require a discussion of cumulative impacts when the incremental effect of the proposed project/action is cumulatively considerable when considered with other past, present and future actions.

The cumulative impacts analysis is conducted on an individual resource basis. A determination first must be made if a resource is affected by the proposed project. The CEQA Guidelines indicate cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. Further, the CEQ Regulations define cumulative impacts as impacts on the environment, which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes the actions. Therefore, even if the impact of the proposed project on a resource is not significant, it may still need to be evaluated for cumulative impacts in relation to other projects. An initial step for creating evaluation criteria in order to determine which projects to include or exclude for cumulative impacts analysis must be developed. Hence, DWR and their consultants, using information provided by the working groups and the guidance from CEQA and NEPA, propose to develop criteria for selecting geographic boundaries, temporal scale, and the list of other projects that may have cumulative effects in relation to the proposed project.

The Environmental Working Group developed a draft guidance document to assist DWR in conducting the cumulative impact analysis on ESA species. The draft guidance document presents a variety of information for use to develop criteria to determine if a separate project, in conjunction with the re-licensing of the Oroville Facilities, may have cumulative effects. The following information is extracted from the draft guidance document and could be used as the basis to create the initial framework for developing the criteria for the cumulative effects assessment.

Step 1 Work Task: Develop comprehensive project information. This appears to be task that is a continuum as information is developed by way of study plans and the future development of PM&E measures. This basically includes the development of a complete project description.

Step 2 Work Task: Potentially affected resources would be singled out for consideration because of their importance and the possibility that they may be impacted by operation and maintenance of Project 2100 under a new license issued by FERC.

Step 3 Work Task: DWR, in consultation with the Participants, will compile a list of other studies and other available information on projects and impacts within the project area or geographic bounds that may affect ESA species or may address cumulative impacts.

Step 4 Work Task: The PDEA process would determine which resources are potentially directly or indirectly impacted by the ongoing project or the proposed modifications to the project. Further, determinations on potential impacts to resources should be based on the record and should be accomplished through the collaborative process using agreed upon criteria, consistent with the requirements of FERC, NEPA, CEQA, and ESA.

Step 5 Work Task: Preliminary geographic boundaries would be identified and determined on a resource-by-resource basis using CEQA/NEPA, ESA and FERC document standards. The limits must be practical in order to prevent unlimited analysis, but will be based on the limit of discernable project impacts.

Step 6 Work Task: These analyses would consider past, present, and reasonably foreseeable future projects that may have a potential effect on resources also affected by Project 2100. Additionally, developments to be considered would include non-hydropower aspects of Lake Oroville, other hydropower projects within the geographic scope of this project, and irrigation in the Feather River Basin

Step 7 Work Task: This analytical approach would be used to determine and evaluate impacts related to this project. As impacts are identified, the studies should suggest measures to avoid, minimize, mitigate, or reduce the severity of negative effects or enhance the resources.